CLAIMS

1. A method of treating an animal to reduce body fat comprising administering to an animal in need thereof a therapeutically effective amount of a phosphodiesterase 9 (PDE9) inhibitor.

2. A method of claim 1, wherein said mammal is overweight.

3. A method of claim 1, wherein said mammal is obese.

4. A method of claim 1, wherein said PDE9 inhibitor is a PDE9 selective inhibitor.

5. A method of treating an animal for an eating disorder, said method comprising administering to an animal in need thereof a therapeutically effective amount of a PDE9 inhibitor.

6. A method of claim 5, wherein said PDE9 inhibitor is a PDE9 selective inhibitor.

7. A genetically-modified mouse, wherein said mouse is homozygous for disruption of the PDE9 gene and wherein said mouse, following a six week high fat diet, exhibits reduced body weight or reduced fat mass in an adipose depot, as compared to a wild type mouse following a six week high fat diet.

8. A mouse of claim 7, wherein said mouse expresses an exogenous reporter gene under the control of the regulatory sequences of said PDE9 gene.

9. A mouse of claim 7, wherein said mouse exhibits nondetectable PDE9 activity.

10. A genetically-modified cultured mammalian cell, wherein said cell is homozygous for disruption of the PDE9 gene and wherein said cell, or a progeny cell derived from said cell, exhibits nondetectable PDE9 polypeptide activity wherein said cell or progeny cell would exhibit PDE9 polypeptide activity absent said homozygous disruption.

11. A genetically-modified mammalian cell of claim 10, wherein said cell is an embryonic stem (ES) cell.

12. A genetically-modified cell of claim 11, wherein said cell is a murine ES cell.

13. A genetically-modified cell of claim 11, wherein said cell is a human ES cell.

14. A method for producing the mouse of claim 7 comprising:

(a) introducing a DNA sequence into a mouse ES cell, wherein the DNA sequence comprises a PDE9 gene targeting construct, which, upon recombination with the PDE9 gene, disrupts the PDE9 gene;

(b) selecting a mouse ES cell whose genome comprises a disruption of the PDE9 gene;

(c) introducing an ES cell selected in step (b) into a mouse blastocyst or morulae;

(d) transplanting the blastocyst or morulae of step (c) into a foster mother mouse;

(e) developing the transferred blastocyst or morulae to term to produce a chimeric mouse; and

(f) obtaining a mouse homozygous for the PDE11 gene disruption by breeding chimeric mice of step (e) and mice heterozygous for the PDE9 disruption;

wherein said mouse homozygous for disruption of the PDE9 gene, following a six week high fat diet, exhibits reduced body weight or reduced fat mass in an adipose depot, as compared to a wild type mouse following a six week high fat diet.

15 An isolated nucleic acid molecule comprising a PDE9 gene targeting construct, wherein, upon recombination with the PDE9 gene, said construct disrupts the PDE9 gene.